

CO04-001-EN

**Towards accessible sustainable architecture, source of autonomy**

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The law of February 11th, 2005 revolutionizes the consideration of the disabled person in our French society. It applies to any type of disability, even crippling situations, by creating statutory obligations in a consideration of accessibility in the widest sense of the term, considering the entire chain of movement. Though the law was much awaited, many obligations it instituted remain to be fulfilled particularly in the field of the construction. The requirement for accessibility by January 1st, 2015 will undoubtedly not be achieved. Nevertheless, shouldn't we see in this law as an asset rather than an obligation? Architecture, the primary art, has always had for its essential function to protect human being and as such cannot do without an analysis on the wide variety of persons constituting the human population, and in particular, the disabled person who, at any age of life, can experience an impairment in physical, or even cognitive integrity. Taking disability into account in the architecture of tomorrow, with for objective restoring autonomy of dependent persons, whether elderly or disabled, makes architecture a source of better life and greater welfare, but also of higher profit, despite the fact that many professionals still consider this new approach as one more restriction on construction. My contribution to this congress is thus to put forward this ideal of a universal architecture, based on new criteria, a new source of desire, pleasure and shared happiness. I will focus on essential points more specifically favouring the autonomy of dependent persons, in particular new technologies (home automation - robotics), integration and the necessary modification of medical material and technical aids, and architectural planning for a new decorum for future generations.

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**Universal accessibility: Domotics**

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**State of the art and perspectives in assistive robotics**

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Since the end of the 80s, researchers in robotics have proposed the use of the robots to assist disabled people. The first applications consisted in compensating for a failing functionality (generally handling) of a disabled person by a robotized function: the arm of the robot replaces the disabled person's arm. While the principle is rather simple, the implementation faces practical problems that researchers quickly identified and sought to solve: how to give a simple and intuitive control of a mechanics as sophisticated as a robot to a person who does not have any expertise in the field. Researchers then devoted much work to the interface between the disabled person and the robot to improve the effectiveness of this team. Satisfactory solutions were reached but the rise of assistive robotics for disabled people then ran up against a second problem: the industrialization and the distribution of products whose manufac-

found in industry. Furthermore the economic model of such a system was not obvious enough so that companies would take the risk to launch such innovations. Assistive robotics arrived at a dead end. But at the beginning of the new century, the ageing of the population put forward new needs for assistance that new types of robots could fulfil. For elderly people, whose autonomous life becomes increasingly difficult due to problems of perception or memory for example, the robot can provide cognitive assistance which will enable them to live longer at home in better conditions. These robots, whose complexity can be very variable, can be produced at affordable prices and viable economic models have been imagined, which will finally allow assistive robotics to grow up.

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**Towards a non-standard project: Conception of a rehabilitation center**M.-F. Vinsot<sup>a,\*</sup>, E. Ladet<sup>b,\*</sup><sup>a</sup> *Fondation hospitalière Sainte-Marie, Paris, France*<sup>b</sup> *Fondation caisse d'épargne pour la solidarité, Paris, France*<sup>\*</sup>Corresponding author.

Rehabilitation centers are often last on the list of healthcare construction projects. General contractors and conceptors are more interested in acute-care or surgical centers where "high-tech" installations take priority over other dimensions, including patient-centered concerns, which nevertheless constitute the heart of the project.

These projects are similar to industrial projects where the ongoing process of medical care predominate over the human (patient and caregiver) aspect. People stay in acute-care establishments for only a short period during which time the system takes over completely.

Considering its mission, the rehabilitation center must be reinterpreted and reorganized as a differentiated space for specialized activities, for readapting to life after returning home. The rehabilitation center is thus a transitional space, which requires a specific programming around the notions of utilization, flow, rhythms, mobility, light, atmosphere, and perceptions.

The aesthetic dimension often neglected or considered as an anecdotal superlative, should be an integral part of this type of project, allowing the patient to focus on something other than his/her own suffering body.

An adapted conceptual approach proposes an analysis of different scenario for using a unique space, in relation with the environment, and with the goal of producing a combined, balanced and functional project fulfilling its mission of patient care and rehabilitation.

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**Accelerating the development of products and services to offset visual impairment**

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According to the WHO, there are 1.8 million visually impaired people living in France.

In the absence of regenerative therapy, the diseases of aging are irreversible. These age related illness which develop individually in different ways from one case to another, have incited industrial companies to work in partnership with patient associations and university laboratories to develop palliative solutions to compensate for visual deficiency. The ultimate goal is to improve the quality of life and the autonomy in everyday life: mobility, accessibility and safety.

The February 2005 law, imposing unilateral access to public spaces becoming mandatory in 2015, gives new importance to innovation on services for the disabled. More and more testing laboratories are developing for the validation of